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On sand stone, Santa Monica Mts. Perhaps not heretofore reported from North America.

Superficially greatly like some of our saxicolous *Heppia*.

*BUELLIA RETROVERTENS* Tuckerm. Syn. N. A. Li. II, 1888, p. 89.

Thallus of small, whitish, round to angular convex squamules, separate and even more or less scattered, their circumference sometimes crenulate or sublobular. Reaction of cortex with KHO yellow, Ca (Cl O) 2 gives no reaction; hypothallus black; apothecia one half to one millimeter wide, sub-immersed, becoming sessile; disk black, naked, from flat with a thin sub-crenulate, concolorous margin, becoming convex and the margin obscured; epithecium subcontinuous, dark brown; thecium colorless, with iodine blue; paraphyses coherent, clavate at the brown tips; hypothecium brown, nearly as dark as the epithecium; asci inflated clavate to subventricose; spores in eight's, bilocular, ellipsoid and oblong-ellipsoid, brown, 0.013 to 0.016 $\mu$  long, 0.006 to 0.008 $\mu$  thick.

On trap rock, Santa Monica Mts.

Sawtelle, California.

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### SOME RARE ABNORMALITIES IN LIVERWORTS.

W. C. COKER.

In looking over hundreds of young sporophytes from a luxuriant colony of *Aneura pinguis* at Chapel Hill, North Carolina, I found two cases where two sporophytes were enclosed in a single calyptra. A longitudinal section of one of these twin sporophytes, represented in Fig. 1., shows clearly that the calyptra is compound, originating from two fertilized archegonia standing close together. The necks of the archegonia are still plainly visible and there is a partition between the sporophytes extending from the top to about half way down. When we consider the manner in which the calyptra of *Aneura* originates the absence of a partition below is easy to understand. It is known that the venter of the archegonium contributes but slightly to the calyptra in this species, the larger part being formed by an upgrowth of the "torus" tissue on which the archegonia were borne.

The tissue which at first completely separated the young sporophytes was pierced at a certain stage by their approach to each other below. Continued growth at the base of the calyptra then elevated the partition leaving the lower parts of the sporophytes in a common cavity. It is evident, therefore, that this abnormality did not originate from a single archegonium which contained two eggs, such as I have described for *Mnium* (Bot. Gazette, Vol. 35, 1903) and Miss Bliss, for *Polytrichum* (Bot. Gazette, Vol. 36, 1903).\*

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\*For examples of two capsules or two entire sporophytes from one archegonium in mosses, and reference to literature see Györfy in Hedwigia Vol. 46, p. 202, 1907.

For many abnormalities in the archegonia of *Mnium* see Holferty in Bot. Gaz. Vol. 37, p. 106, 1904.

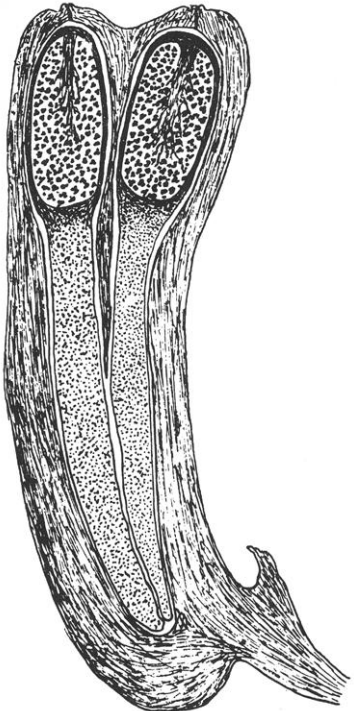


Fig. 1.

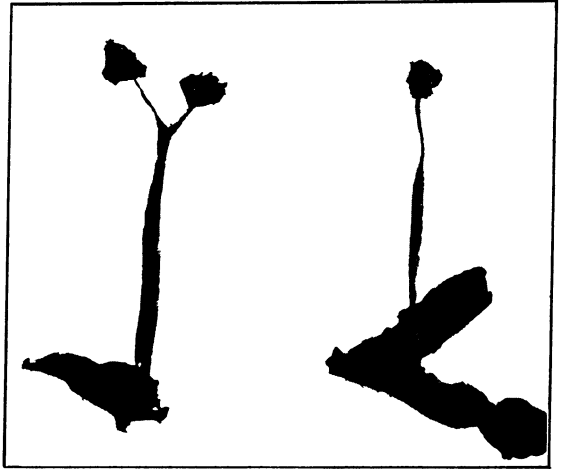


Fig. 2.

In the same colony of *Aneura* in which the plant above mentioned grew was another which showed a decided growth in one of the unfertilized archegonia which were carried up the calyptra by its basal growth. This archegonium was about one-third the size of the calyptra on which it grew, and projected at right angles from it at about its middle point.

On sectioning it was seen that this archegonium contained no sporophyte and had scarcely a trace of the egg and neck cavity. Its growth seemed to be induced by a sympathetic response to the vitalizing influence of the adjoining sporophyte.

A second very unusual but entirely different case of fasciation I have met with in *Preissia quadrata*. While collecting at Ithaca, New York, a plant was found showing a double archegoniophore. A photograph of it is shown in Fig. 2. The stalk is almost exactly twice as wide as in the single archegoniophore shown in the same figure.

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FIG. 1. Twin sporophyte in *Aneura pinguis*  $\times 15$ .

FIG. 2. Double archegoniophore in *Preissia quadrata*. Natural size.